

What is claimed is:

1. A method of controlling a dissolution rate of a bioactive agent, the method comprising:

5 applying a first drop of solution carrying the bioactive agent at a first selected location on a delivery substrate; and

positioning a second drop of solution carrying the bioactive agent at a second selected location on the delivery substrate, wherein the location of the first drop and the location of the second drop are selected based on a target dissolution rate.

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2. The method of claim 1, wherein the first drop and the second drop at least partially overlap.

15 3. The method of claim 1, wherein the first drop and the second drop are spaced to avoid coalescing.

4. The method of claim 1, wherein applying the first drop of solution and positioning the second drop of solution includes heating solution carrying the bioactive agent with a thermal ejection element.

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5. The method of claim 4, wherein the heated solution is applied via at least two nozzles sized to eject drops of solution having substantially the same volume.

25 6. The method of claim 1, wherein applying the first drop of solution and positioning the second drop of solution includes displacing the solution carrying the bioactive agent with a piezoelectric ejection element.

30 7. The method of claim 6, wherein the displaced solution is applied via at least two nozzles sized to eject drops of solution having substantially the same volume.

8. The method of claim 1, further comprising positioning a plurality of drops of solution carrying the bioactive agent, each at a location selected based on a target dissolution rate.

5 9. The method of claim 8, wherein a standard deviation of distance between adjacent drops is less than approximately 15% of a mean distance between adjacent drops.

10 10. The method of claim 8, wherein a standard deviation of combined geometric surface area of overlapping drops is less than approximately 15% of a mean combined geometric surface area of overlapping drops.

11. A bioactive dosage form, comprising:
a delivery substrate; and
15 a plurality of dots of bioactive agent patterned on the delivery substrate according to a target dissolution rate.

12. The bioactive dosage form of claim 11, wherein at least one of the plurality of dots at least partially overlaps with at least one other dot.

20 13. The bioactive dosage form of claim 11, wherein each dot at least partially overlaps with at least one other dot.

14. The bioactive dosage form of claim 11, wherein at least one of the plurality of dots fully overlaps with at least one other dot.

15. The bioactive dosage form of claim 11, wherein each dot is discretely spaced from all other dots.

30 16. The bioactive dosage form of claim 11, wherein the delivery substrate includes an ingestible media.

17. The bioactive dosage form of claim 11, wherein the delivery substrate includes at least one of starch, glycerin, gelatin, wheat gluten, hydroxypropylmethylcellulose, methocel, pectin, xanthan gum, guar gum, algin, pullulan, sorbitol, seaweed, polyvinyl alcohol, polymethylvinylether, poly-(2-ethyl 2-oxazoline), polyvinylpyrrolidone, milk proteins, rice paper, potato wafer, and films made from restructured fruits and vegetables.

18. The bioactive dosage form of claim 11, wherein the delivery substrate includes pullulan.

19. The bioactive dosage form of claim 11, wherein a standard deviation of distance between adjacent dots is less than approximately 15% of a mean distance between adjacent dots.

20. The bioactive dosage form of claim 11, wherein a standard deviation of combined geometric surface area of overlapping dots is less than approximately 15% of a mean combined geometric surface area of overlapping dots.

21. A bioactive agent application system, comprising:
a plurality of nozzles; and
ejectors paired with the plurality of nozzles, wherein each nozzle and ejector pair is collectively configured to selectively eject a bioactive agent in drops of solution onto a delivery substrate in a pattern based on a target dissolution rate.

22. The bioactive agent application system of claim 21, wherein the pattern includes at least partially overlapping drops.

23. The bioactive agent application system of claim 21, wherein the pattern includes fully overlapping drops.

24. The bioactive agent application system of claim 21, wherein the pattern includes discretely spaced drops.

25. The bioactive agent application system of claim 21, wherein each
5 ejector is configured to selectively fire solution carrying the bioactive agent through a nozzle by selectively heating the solution.

26. The bioactive agent application system of claim 21, wherein each
ejector is configured to selectively fire solution carrying the bioactive agent
10 through a nozzle by selectively displacing the solution.

27. The bioactive agent application system of claim 21, further comprising a controller configured to cause the nozzles and ejectors to eject the bioactive agent in a pattern in which a standard deviation of distance between
15 adjacent ejected dots is less than approximately 15% of a mean distance between adjacent ejected dots.

28. The bioactive agent application system of claim 21, further comprising a controller configured to cause the nozzles and ejectors to eject the
20 bioactive agent in a pattern in which a standard deviation of combined geometric surface area of overlapping dots is less than approximately 15% of a mean combined geometric surface area of overlapping dots.